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ORIGINAL ARTICLES.

ON INTRAOCULAR EPITHELIAL NEWFORMATIONS.*

By ADOLF ALT, M.D.

AFTER a previous article on the same subject in Vol. VI., *Archives of Ophthalmology and Otology*, I described, in 1880, in my book on the histology and pathology of the human eye (Lectures on the Human Eye), certain newformations which take their origin from the pigment epithelium of the ciliary body during a plastic cyclitis in the following words (page 106): "The whole layer appears very much thickened and grows into the cyclitic membrane in an irregular way. We, however, also observe frequently a more typical kind of proliferation of the cells of the uveal layer, in the shape of cylindrical tubes which grow into the cyclitic membrane and give off branches. In longitudinal and transverse sections these tubes appear like the glandulæ tubulosæ or the epithelial cylinders of an epithelioma. The cells of these tubes are either free of pigment or pigmented. Their shape

*Read at the meeting of the Western Ophthalmologic and Oto-Laryngologic Association, held in Chicago, April 10, 11 and 12, 1902, and illustrated by lantern slides.

and arrangement with their branches have given some authors (like Schiess-Gemuseus) the idea that they are blood-vessels whose walls are filled with pigment. * * * Not all the cells originating by proliferation from the uveal layer are pigmented, and I am even convinced that the young cells are at first always unpigmented, and form their pigment only later on." * * *

And later on (on page 122), concerning the pigment epithelium of the choroid: "An undue and pathological newformation of cells is not infrequent in the pigmented epithelial layer (of the choroid). It is seen in nearly all cases of choroiditis. * * * The new formed cells (as already stated by Virchow) are at first nearly always free from pigment. They are, however, as it seems, able to form their pigment at any time themselves. The newformation may produce a simple thickening of the pigmented epithelium by superposing layer after layer of new cells. The formation of tubular offsets, similar to the epithelial cylinders of an epithelioma, appears, however, to be more frequent."

About a year previous to this I had also described (in Knapp's *Archives of Ophthalmology and Otology*, Vol. VI.) a tumor springing from the ciliary body and adjoining part of the choroid, which consisted of connective tissue very rich in cells in which pigmented and unpigmented cell-cylinders were imbedded.

Later on, when having studied a much larger number of eyes, I became convinced that the so-called pars ciliaris retinæ, that is the innermost covering of the ciliary body, consisting of one layer of unpigmented cells, may, and perhaps always does in these cases, also proliferate in the same manner as does the pigment epithelium, and that it may, furthermore, do so independently. The cells of the pars ciliaris retinæ may form new layers superimposed on the original one; or they, too, may form cylinders and cylindrical tubes, growing towards the interior of the eye, which seem to remain unpigmented or become pigmented at a very late date.

With these observations of mine the history of intraocular epithelial newformations, seems to have had its beginning.

Then came Treacher Collins' somewhat startling announcement of what he called the glands of the ciliary body. This

name he gave to the pegs which spring *outwardly* from the pigment layer of the ciliary body, especially in its smooth portion. I am sure he is mistaken as to the special glandular character of these pegs. He spoke of the cell-cylinders I had described as if they were represented by these glands when they had become enlarged in pathological conditions. The proof he has not brought forward, and I have shown, in a paper entitled "On E. Treacher Collins' So-called Glands of the Ciliary Body" (in the January, 1896, number of the *American Journal of Ophthalmology*) that these pegs do not become enlarged in these cases spoken of, and that they may co-exist in an unaltered condition with the cell-cylinders which grow towards the axis of the eyeball from the two retinal layers of the ciliary body.

As a direct consequence of his views, Collins called the tumor just mentioned and formerly described by me an adenoma, which is perhaps correct, only with the understanding that Collins' so-called glands had nothing to do with its origin.

In 1898 and '99 I described a number of epithelial tumors, consisting of glandlike tubules containing an amorphous, coagulated, gelatinous substance, always found to affect one ciliary process only, and in one individual seen in both eyes, as adenoma of the ciliary body. I have now the sections of eight of such tumors in my collection. When I described these cases I thought none like them had been previously described. Yet I have since found that Pergens (in Vol. XXXII. of Knapp's *Archiv für Augenheilkunde*) had previously described an adenoma of the ciliary body which was probably the same kind of a tumor as mine, although the primitive drawing does not allow of a clear view; and, very soon after my publications, V. Hanke (in Vol. XLVII. of Graefe's *Archiv für Ophthalmologie*) described another such tumor, with a drawing which shows his case to have been an exact reproduction of my cases. He published it under the name of "An Epithelial Tumor of the Ciliary Body." Two similar cases, though not exactly alike, had previously been also described, one by Badal and Lagrange (*Archives d' Ophtalm.*, 1892) as a primary carcinoma of the ciliary body; and one by Michel (Graefe's *Arch.*, Vol. XXIV.), which he

termed "a mixed endothelial and epithelial carcinoma," with its origin in the cells of the pars ciliaris retinæ. In Vol. XIV. of the Transactions of the Ophth. Society of the United Kingdom, J. Griffith described a case of primary melanotic tumor, consisting largely of epithelial cells, and considered it a carcinoma, in view of its malignancy.

In his book (Researches into the Anatomy and Pathology of the Eye, 1896) E. T. Collins reports "A Case of Primary Melanotic Glandular Carcinoma of the Ciliary Body," and a second one as "A Primary Tumor of the Ciliary Body Exhibiting Glandular Structure." And again, in 1899 (Transactions of the Ophth. Society of the United Kingdom) he, together with Mr. Snellen, reports "A Case of Intraocular Primary Carcinoma of the Eyeball."

In the same year, R. Schlipp reported a case from Prof. Fuchs' clinic (Graefe's *Archiv*, Vol. XLVII.) of "An Epithelial Tumor of the Ciliary Body." He says: "After the foregoing we have to deal with a primary tumor of the ciliary body which belongs to the group of epithelial tumors; yet we desist from directly calling it a carcinoma." In this case, as I am fortunate enough to see from some sections I owe to the kindness of Professor Fuchs, almost the whole of the interior of the eyeball is filled with epithelial cells. At the time when the case was described the patient was well, which did not seem to point to a malignant character.

In his exhaustive treatise (Traité des tumeurs de l'œil, de l'orbite et des annexes, 1901) F. Lagrange devotes a whole chapter to epithelioma and carcinoma of the ciliary processes and ciliary body, in which he refers to most of the cases here mentioned, and gives some beautiful illustrations of his own case. He takes issue with C. Emmanuel, who (Virchow's *Archiv*, Vol. CLXI., 1900) called Lagrange's case a gliomæ of the pars ciliaris retinæ, and in general seems to deny the probability of primary intraocular epithelial tumors. Lagrange, on the other hand, contends that Emmanuel's case of glioma of the pars ciliaris retinæ is in reality an epithelial tumor.

From the foregoing, I think there can be no longer any doubt but what epithelial newformations are found to spring from the two epithelial layers of the ciliary body and processes, and in rarer cases from the pigment epithelium of the choroid.

There is, furthermore, no reason why similar newformations might not take their origin from the epithelial covering of the posterior surface of the iris. Such an observation, and so far it seems the only one hitherto published, was made by Hirschberg and Birnbacher, who described a case of spongy carcinoma of the posterior layer of the iris (*Centrlbl. f. prakt. Augenhlk.*, 1896).

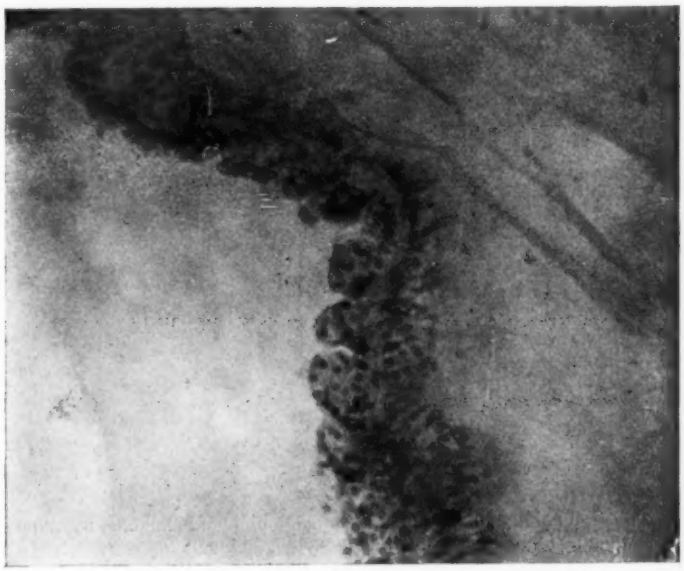

FIG. 1.
To the right pus ciliaries, to the left cell pegs.

When speaking of these newformations we must, however, not forget that their malignancy is as yet not proven, as only one patient, that of Griffith, died from such a tumor. On the contrary, the character of these tumors seems to be a benign one, and most of them have really been found accidentally, a number of them in injured and otherwise pathological eyes. The similarity to benign adenomata is frequently very apparent, as the cells of the pigment epithelium, as well as those of the pars ciliaris retinæ, seem to have a special tendency when proliferating, as I stated before, to form cylinders, which are solid or may be tubular in character.

After this introduction, I want to describe some more recent additional observations of my own on this subject and to illustrate them with lantern slides.

Before, however, going further I want to show you some lantern slides of the unbleached and bleached iris and ciliary body showing the epithelial covering of both and the pegs of epithelial cells which Collins called glands. You will readily see that these pegs are solid and have no central lumen, as Collins claims. I am happy, furthermore, to state that the specimen from which some of these photographs were taken by me comes from headquarters, from Collins' own laboratory. (See Fig. 1 and 2.)

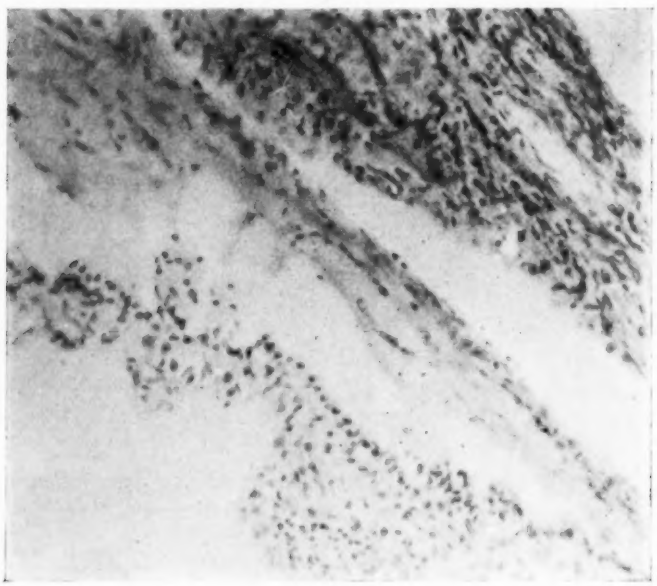

FIG. 2.
The cells in the lower part of the picture are the two epithelial layers of the ciliary body. Several pegs are easily distinguished.

The smallest epithelial newformations which I have found now and then lie on the ciliary processes, and they consist just of a few cells projecting into the interior of the eye from the pars ciliaris retinæ like microscopical buds. I have found these in a number of eyes, usually of old people. They were also present in the two eyes of one individual, in each of which an adenoma of one ciliary process was found, of which I shall show you some slides.

Sometimes the pars ciliaris retinæ—that is, the unpigmented epithelium covering the inner surface of the pigmented epithelium on the pars non plicata—is found to be

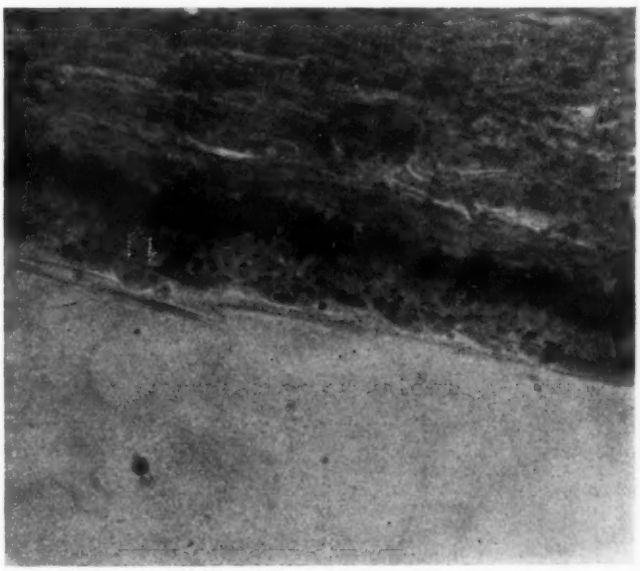

FIG. 3.

thicker than normal and to consist of several layers of cells instead of one. The arrangement of the cells is not as regular as in the norm, and forms wave-like projections into the interior of the eye. (See Fig. 3.)

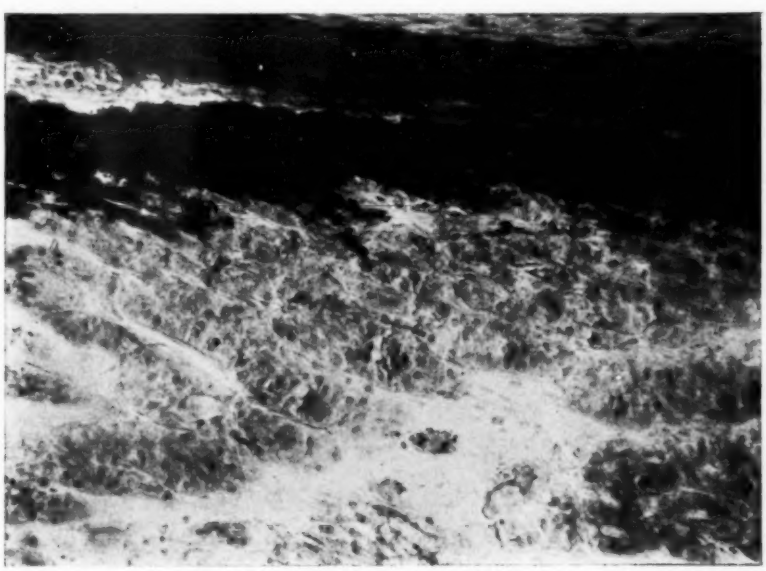

FIG. 4.

A further progress of such a proliferation is then seen in the formation of unpigmented tube- and cylinder-like projections, which may be quite numerous, and reach for quite a distance into the interior of the eye. (See Fig. 4.)

Similar cylinders and tubes may be formed by the pigment epithelium and may be partly pigmented, partly unpigmented. The slides to illustrate this are taken from the original newformation described by me and by Collins called an adenoma. (See Fig. 5.)

Thus far we have been dealing with newformations of the epithelial layers of the ciliary body and its processes, and I

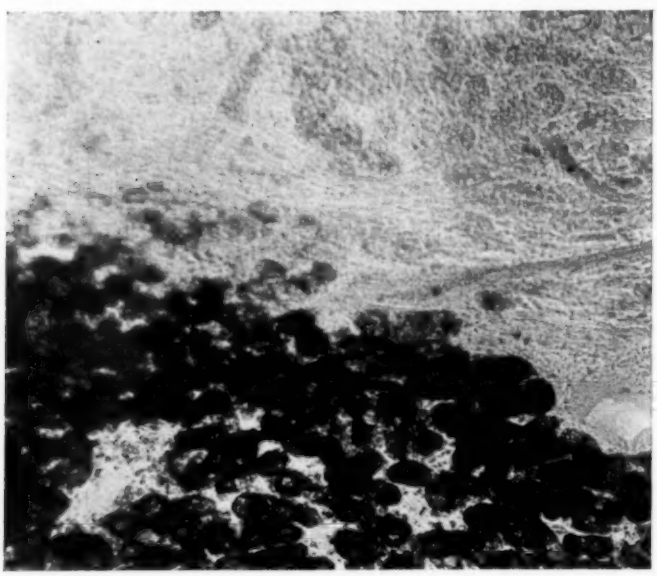

FIG. 5.

may state that they usually start just in front of the ora serrata.

That the same or very similar changes may occur also in the pigment epithelium layer of the choroid, is not so well known, and the cases which I will show you have not yet been described.

First, in an injured eye with detachment of the retina and beginning ossification in the choroid, I found in the region of the posterior pole, inside of the almost normal one-cell layer of pigment epithelium, covering quite a large area, eight or ten rows of pigmented cells, with a small amount of

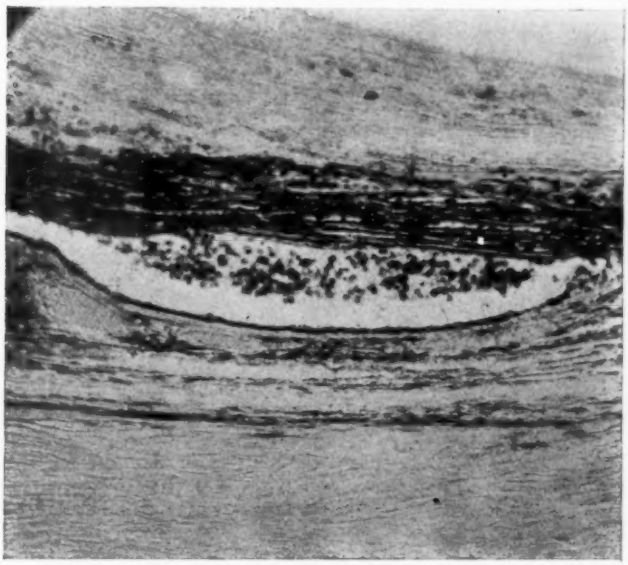

FIG. 6.

connective tissue intervening. These layers of pigmented cells were evidently proliferated from the normal pigment epithelium. This is an excellent sample of the superimposition of pigmented epithelial layers which I mentioned in the beginning of this paper. (See Fig. 6.)

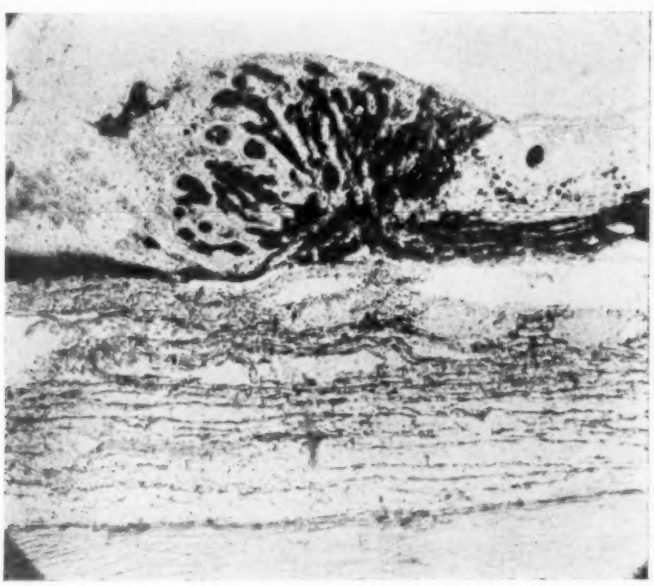

FIG. 7.

Second, a tumor-like newformation consisting of pigmented cell cylinders which spread fan-like from the pigment epithelial layer of the choroid near the equator of the eye into the interior. This new formation is very similar to the adenoma I found springing from the ciliary body. This eye had also been injured. (See Fig. 7.)

Third, in an eye with detachment of the retina and somewhat back of the ora serrata, I found a small newformation which consisted of some connective tissue and numerous cyl-

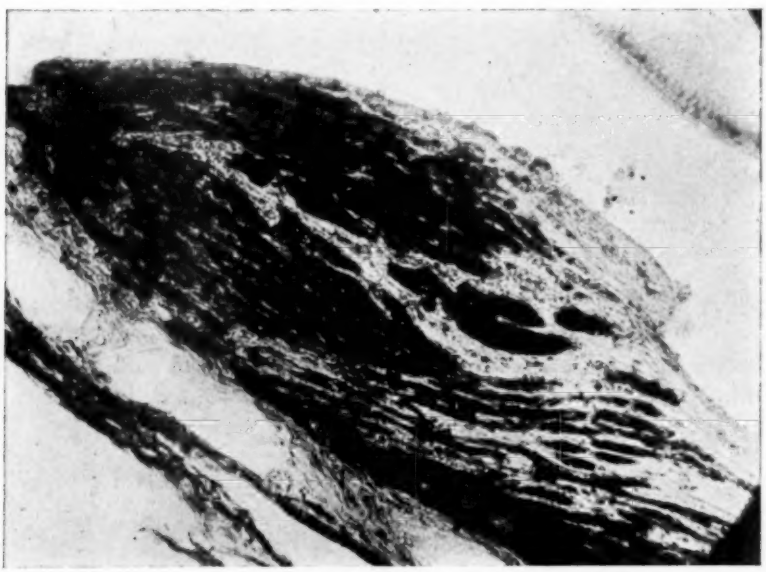

FIG. 8.

inders of darkly pigmented epithelial cells. These cell cylinders lie inside of the lamina vitrea of the choroid and start directly from the pigment epithelium layer. In bleached sections the real nature of the pigmented cylinders, as being made up of epithelial cells, is easily distinguished. Furthermore, this newformation contains a number of bloodvessels, the origin of which I have, however, not been able to trace. (See Fig. 8.)

Fourth, is a very similar newformation in another eye with detachment of the retina. It lies also just backwards of the ora serrata. The direct connection of the pigmented cylinders with the pigment epithelium layer of the choroid is plainly seen in all sections.

Finally, I show you here what, as far as I know, is a perfectly unique observation, namely, a polypus-like epithelial tumor growing from the posterior surface of the iris backwards. It takes its origin with a thin pedicle, and resting, apparently, on a ciliary process, has grown there to an appreciable size. That it consists almost altogether of epithelial cells is plainly seen in bleached sections. This and Hirschberg's case of spongy carcinoma of the posterior surface of the iris are the only two known cases of iritic epithelial tumors, as far as I know. (See Fig. 9.)

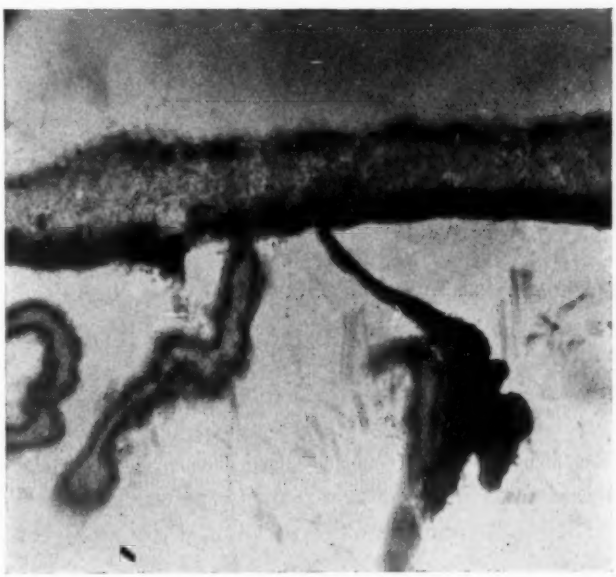

FIG. 9.

As I stated above, there can then be no more doubt, and I cannot understand why there ever should have been any, but that newformations of an epithelial character can and do occur primarily within the eyeball, and that the pigmented epithelial layer of the choroid, as well as the pigmented and unpigmented epithelial layers on the inner surface of the ciliary body and the two pigmented epithelial layers on the posterior surface of the iris, can give rise to such newformations. It is much more difficult to classify them. On the whole, however, they seem to be of a benign and some of them of an inflammatory character.

The metastatic secondary intraocular epithelial newformations are foreign to this paper.

CAVERNOUS ANGIOMA OF THE ORBIT.

By HARRY FRIEDENWALD, A.B., M.D.,

BALTIMORE, MD.

MRS. F., aged 24, was first seen July 7, 1893. She had had two children and one miscarriage. During the pregnancy with the last child (born nine and a half months before her visit) the right eye suddenly became prominent. There is no history of injury, and lues is denied.

The right palpebral fissure is about 3-4 mm. wider than the left, but she can close the lids tightly. The eye seems to be pushed directly forward. There is no lateral displacement and she does not complain of diplopia. The movements of the eye are normal. The eye cannot be pushed back. Vision of each eye is very good, about $^{6}/_{7.5}$. There is neither pain nor sensitiveness to pressure. The condition has not changed since it first appeared. The fundi of both eyes are normal. There is no enlargement of the retinal vessels in the right eye. The diagnosis was made of a tumor directly behind the eyeball. In order to eliminate the possibility of a gumma, iodide of potassium was ordered.

The patient was not seen again for two months. Early in September she returned stating that she had taken the iodide of potassium for many weeks without improvement.

The exophthalmus had increased, the eyeball was pushed far forward and somewhat downward. One could enter the fingertip between margin of orbit above and the prominent eyeball and feel a soft tumor deep in the orbit. The retina was congested and there was a slight neuritis. (Margin of disc blurred). Vision had sunk greatly. With the right eye she could now count fingers at but four meters.

Operation September 13, 1893: Under chloroform, an incision was made in the upper lid in the line of the fold, extending freely on both sides nearly to each canthus. It was then possible to separate the underlying tissues without very much cutting, and that mostly with the scissors, until the growth was reached. This was then freed carefully with a blunt grooved director in all parts so that the instrument could be swept freely around it. Then the growth was grasped with double-pronged tenaculum forceps, extracted *in toto* and without in-

jury. The cavity felt smooth and bled freely; the wound was sewed with interrupted sutures and a bandage applied firmly to prevent hæmorrhage. The tumor was soft, dark-blue and apparently very vascular.

The patient made a rapid recovery. The sutures were removed at the end of one week. At this time there was considerable ptosis.

October 3d. Ptosis still marked. Movements of eyeball very good.

FIG. 1.

In July, 1899, the patient returned for the relief of the ptosis. A strip of skin was removed from the lid. The exophthalmus has disappeared entirely. There was no restriction of the movements of the eyeball, but slight ptosis. (See Fig. 1). Her sight has gradually improved.

August 16, 1899. { V. R. E. with + 0.75 D. S., $^{18}/_{70}$.
V. L. E. with + 0.75 D. S., $^{18}/_{20}$.

The right optic disc is paler than the left, but not distinctly atrophic.

The tumor was irregular in shape, measured (after hardening) 37 mm. in width, 23 mm. in height, and 28 mm. in

depth, and weighed 19.30 g. Its surface is studded with small prominences. The accompanying photograph is life size and shows the upper aspect. (See Fig. 2). It is flattened below and in front through pressure against the eyeball. Histologically, it is composed of typical small and large cavernous spaces, separated by very thin partitions of connective tissues. The outer capsule is likewise very thin. The walls of the spaces have an endothelial lining. The contents of the spaces are for the most part blood corpuscles. At a number of points the corpuscles seem to have separated and leave a clear homogeneous mass. The hyaline bodies described by Knapp are seen at numerous places arranged in rows along the margin of a cavity.

The number of cases of cavernous angioma hitherto reported is not small. Panas, in his "Maladies des Yeux," in 1894, refers to fifty-four cases collected by Berlin up to 1880, and adds twenty-one, making a total of seventy-five cases to that date. Still, an affection which Knapp had seen but once in thirty-five years, is one of rare occurrence, and, as Knapp states, many of the cases above mentioned do not bear criticism as to diagnosis. I find a few cases reported since Panas collected his cases.*

In a few cases traumatism is mentioned as a possible etiological factor. In one (Copez and Depage), the exophthalmus came on suddenly during defecation and gradually increased.

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*1. Feuer. Pest. Med. Chir., Presse, XXIX., p. 319. Reviewed in Nagel's Jahresber. for 1893, p. 458.

2. Tailor. (Univ. of Naples). Nagel's Jahresber., 1895, p. 191.

3. H. Knapp. Arch. of Oph., Vol. 25, p. 116, 1896.

4. Schrieber. (Bericht ueber Schrieber Augenheilanstalt in Magdeburg, 1896, p. 22). Nagel's Jahresber. for 1896, p. 446.

5. Neese. Arch. f. Augenh., Vol. 25, p. 9. Reviewed in Nagel's Jahresber. for 1897, p. 135.

6. Defrege. Rev. gen. d'Ophtal., 1898, p. 517. Nagel's Jahresber. for 1898, p. 591.

7. Usher. Brit. Med. Journal, 1898, p. 621.

8. Sokolow. From the Russian. Nagel's Jahresber. for 1898, p. 604.

9. Coppez and Depage. Soc. Med. Chir. du Brabant. Nagel's Jahresber. for 1899, p. 529.

10. Weiss. Muenchen. Med. Wochenschr., 1899, p. 1205.

11. Zimmerman. Ophth. Klinik., 1899, p. 202.

12. A. Knapp. Arch. of Oph., 1900, p. 141.

13. Bull. Trans. Amer. Ophth. Society, 1900, p. 27.

This case, however, differs from most reported in having been distensible and increased in size when the patient bent down, or blew up the cheeks. In the case reported above the tumor made its appearance during pregnancy.

The situation of the growth was in most cases within the muscular cone, a fact pointed out by Panas. The case described by us is an exception to the rule, the tumor having been found in the upper portion of the orbit, apparently outside the muscular cone; it was not necessary to sever the recti muscles during the operation.

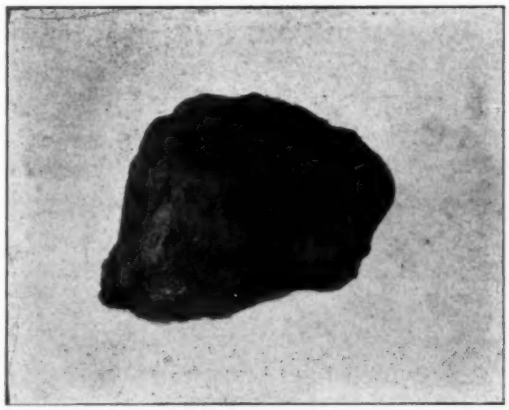

FIG. 2.

These tumors vary in size from that of a hazelnut to that shown in the accompanying illustration, and still larger ones are on record.*

The symptoms produced are slight. There is no pain and for a long time sight is unaffected. The exophthalmus is the most marked sign and this is developed gradually and in a direction almost directly forward. When the exophthalmus has become very marked, we find congestion of the optic nerve and retina, followed by optic neuritis or neuroretinitis and ending in optic atrophy. At the same time vision becomes reduced and often ends in complete blindness. These inflammatory changes of the optic disc and retina usually disappear rapidly after removal of the growth, and improvement of vision is noted in almost all cases. Thus, Sokolow reports

*Neese described a tumor between five and six cm. in its longest diameter, and four and five cm. in its shortest.

that the eye, which at the time of the operation was blind, subsequently obtained vision $^{1}/_{10}$, and in the case of A. Knapp vision rose from $^{4}/_{200}$ to $^{20}/_{50}$. In the case reported above, vision rose from counting fingers at four meters to $^{18}/_{70}$.

Bowman, in 1859, first suggested the necessity of making the effort to remove circumscribed orbital tumors without sacrificing the eyeball, and H. Knapp first succeeded in preserving the eyeball through this operation by temporarily severing one of the recti muscles and thus gaining access to the tumor (1874). In this manner he removed a cavernous angioma in 1896. Knapp again called attention to the many cases in which the eyeball had been removed unnecessarily and to the importance of making an exploratory operation with the hope of saving the eyeball. In the case reported above, the removal was accomplished without difficulty through the narrow space between the projecting eyeball and the upper margin of the orbit, a pair of double tenaculum-forceps assisting greatly in the delivery.

Since Kroenlein described his method of removing orbital growths after temporary resection of the temporal wall of the orbit, several cases have been reported in which the operation has been applied with success to cavernous angiomata. (Sokolow, Copez, Weiss and A. Knapp).

Concerning the neoplasms, it may be stated that they have shown remarkable similarity of structure. Surrounded by a more or less dense fibrous capsule, the growth is made up of smaller and larger spaces filled with normal or disintegrated blood and separated by walls of connective tissue. The cavities have in many cases presented an endothelial lining, in others no endothelial lining could be found. (H. Knapp).

Hyalin bodies have been found arranged in rows along the walls of the cavities or filling an entire alveolus. (H. Knapp). The amount of fibrous tissue varies and has been found so abundant as to lead to the diagnosis of "fibrous angioma." (Neese).

A CASE OF LANDRY'S DISEASE, WITH INVOLVEMENT OF EYE MUSCLES.

By L. R. CULBERTSON, M.D.,

ZANESVILLE, OHIO.

I WAS called in consultation, April 29, 1901, with Dr. C. M. Rambo of this city in the case of Mr. E. N., age 30-35. The case presented the following history: Some ten days ago he went fishing on a warm day in April and sat on a cold rock for some time; later was caught in a light shower. That night he felt some rheumatic pain. Next day he went to his place of business (a bookkeeper), and while there staggered in walking as though drunk. He soon had to go home, and by evening could not move his legs. Next day he could not move his arms. After several days he was removed to the hospital. When I saw him symptoms were as follows: Complete motor paralysis below neck, sphincters retentive and bowels and stomach normal, slight enlargement of spleen, liver normal. Has anæsthesia on both sides of body, but scattered. Rt. gr. toe 8 lines, left 10 lines; dorsal rt. ph. first gr. toe 9, left do. norm. Dorsal foot rt. 20, left 16; Dor. prox. phal. 3 points felt at and beyond 3 lines, left ditto. Tip nose feels 3 points at and beyond three lines.

Tires easily when swallowing and in deep breathing. Cannot whistle, due to slight involvement of facial nerve. Sight, smell, taste and hearing normal. Has diplopia, and objects seen some six or eight feet apart. Esophoria 10°; L. H. 3°. The right abducens is paralyzed and slight paresis of rt. sup. rectus. No ptosis, subduction normal, superduction defective; dextroversion almost nil, laevoversion normal.

Pupils dilate normally to light, both by direct and cosensual reflex; contract sluggishly to accommodation.

Fundus R. E. disc pale and slightly hazy on inner half; veins very large and tortuous. L. E. disc hazy on outer half; veins enlarged and tortuous.

Has been taking bromides in large doses; cannot sleep.

We diagnosed Landry's disease (myasthenia gravis). He denies ever having had venereal disease and we can find no evidence of it, and he is a man of good habits; does not drink or smoke. Cannot ascertain if there is a tuberculous history. Never had rheumatism; had typhoid fever some years ago.

May 2. Can move his left arm above his head, and left leg slightly, but no motion on right side. Objects now seen on a level and 10° apart. Stop bromide and give strychnine and iodide of potash.

May 4. Consultation with Dr. Phillip Zenner of Cincinnati, O. Dr. Zenner, after a thorough examination, pronounced it a case of Landry's disease, with spinal complications, and said it was probably due to toxines in the blood, and as he had already made some improvement he might entirely recover.

Urine s. g, 1012,no albumen, chlorides 14%, phosphates 4%; two small hyaline tube casts found. Tube casts not found in later examinations.

Dr. Zenner advised that Dr. Rambo's treatment be continued and that electricity be used.

May 21. Can move legs and arms and no diplopia. All symptoms gradually disappeared. In June he could walk. While he was at his worst his fianceé came to him from California. About a month after his complete recovery he was married (though not by his physician's advice, as such a procedure might have proven disastrous), and went with his bride to California to reside. He is reported as being quite well and never had any return of the disease.

THE MANNER OF MAKING AN IRIDECTOMY IN ACUTE GLAUCOMA.

By SWAN M. BURNETT, M.D., Ph.D.,
WASHINGTON, D. C.

CONFESSEDLY the making of an iridectomy in acute inflammatory glaucoma by the classical and usually followed methods of opening the anterior chamber is the most difficult operation in eye surgery. These methods, as they are recommended in the text-books, consist either in the use of the triangular knife in the usual way for making an ordinary iridectomy, or the Graefe knife with a puncture and counter-puncture, as in the operation for extraction of cataract.

When the anterior chamber is abolished, or practically so, and the iris has been reduced to a narrow rim, or, may be,

lost sight of under the scleral edge of the cornea, these procedures are either impossible or, at the best, fraught with the greatest danger to the lens.

Some seven years ago, having an extreme case of this kind to deal with, it occurred to me that a happy turn out of the difficulties would be to adopt a modification of the incision which all the old followers of the Moorfield's clinic will remember as the Streatfield incision for cataract extraction. This consists in opening the anterior chamber with the point of a cataract knife, held at right angles to the surface of the ball, and following the curve of the base of the cornea for the extent of the opening desired. The modification of this which suggested itself to me was to make an opening into the anterior chamber from without, by successive strokes with the point of a Graefe knife, following the curves of the corneal base as far behind the clear cornea as was desirable for the most peripheral position of the wound. The essential idea is to cut the layers at the sclero-corneal junction as evenly as possible throughout the whole extent of the incision. The bottom of the wound thus carefully made finally gives way at some point, and through this opening there is a gush of aqueous and usually a prolapsed iris. A triangular knife with a bulbous point (which I obtained in Paris, and was, I believe, designed by one of the Parisian ophthalmologists) is then introduced into the wound and the section of the already thinned tissue completed by the sharp sides of the knife. The bulbous point protects the lens and cornea from any injury. A short, thin, straight knife with a bulbous point can also be used for the same purpose, or even a blunt-pointed scissors in the absence of the more suitable means. The iris now usually occupies the opening and is seized with the forceps and cut in the usual way.

The high tension of the globe renders the making of the incision up to the time of perforation extremely easy. The bleeding, which might obscure the field of operation, can be done away with by the use of the suprarenal solution.

If so desired, it is possible to construct a special knife for making the incision. It would be in the form of a hatchet, with a slightly rounded cutting edge of 3 or 4 mm. length. I have found, however, a rather short, stout Graefe knife quite sufficient.

I can hardly believe that so simple and rational a procedure should not have occurred to other operators, and possibly many others are practicing it to-day; but it has not found its way into our principal text-books, nor, so far as my research goes, into periodical literature.

All of my confréres with whom I have discussed the subject have declared it to be novel, and some have made an application of it in their difficult cases with much satisfaction.

But, whether new or old, it is a method, which from my experience in a number of cases, I believe has such merits as to warrant a much wider employment than it seems to have, and I can cordially commend it for trial.

THE seventh meeting of the Western Ophthalmologic and Oto-Laryngologic Association was held in Chicago April 10, 11 and 12. It was a very enthusiastic, socially brilliant and scientifically most enjoyable and useful meeting. The officers elected for the ensuing year are: W. L. Ballenger, Chicago, President; J. O. Stillson, Indianapolis, First Vice-President; J. M. Ray, Louisville, Second Vice-President; E. Pynchon, Chicago, Third Vice-President; D. T. Vail, Cincinnati, Secretary, and O. J. Stein, Chicago, Treasurer.

CHANCROID OF THE EYELID.

Mathias Lanckton Foster (*New York Medical Journal*, March 15th) reports a case in a man, 30 years of age, who, one month previous, contracted a sore on his penis, which was followed by suppurating buboes in the groin. The upper lid was swollen and red; the ulcer was elliptical, its edges abrupt and elevated, but not indurated; its floor was excavated and covered with a purulent detritus. The venereal sore most frequently met with in this location is the chancre. The author has been unable to find, in medical literature, a case reported in which chancroid of the eyelid was even suspected.

MEDICAL SOCIETIES.

PROCEEDINGS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.*

W. Adams Frost, M.D., F.R.C.S., Vice-President, in the Chair.

Friday, March 14, 1902.

Symmetrical Concentric Folds of Choroid and Retina in Four Cases of Unusually High Myopia.

Mr. Lawford Knaggs (Leeds) read this paper. The appearance presented was that of a crescent having a sharp dark edge. It was always situated on the nasal side of the disc and at varying distances from it, and when both eyes were affected the condition was symmetrical. It was vertically placed, and its concavity faced the disc. It was two, three or four times the diameter of the disc in height. The condition producing this appearance was a folding back of the choroid and retina upon itself towards the disc; in other words, there was a detachment of both tunics from the sclerotic. The dark edge was due to the increased thickness of pigment at the summit of the fold where it turned round upon itself. Vessels curved round the fold as round the edge of a glaucoma cup. The appearance had been met with in four cases. Both eyes were affected in three, and in the other one eye had been lost from accident. The measure of the myopia varied from —18D to —38D, neglecting astigmatism. In one eye there was a rent on the anterior surface of the fold through both tunics showing the sclerotic, and the edges were turned towards the vitreous. In another there was a wrinkling of both coats on the nasal side of the crescent and parallel to it. In Haab's *Atlas* (edition 1901, Fig. 79) a very similar appearance was shown, but was described as true staphyloma in a highly myopic eye. The explanation was probably this: The anterior attachments of the choroid and retina, stretching unduly in consequence of the elonga-

tion of the eyeball, permitted the two inner tunics to slide back towards the posterior pole; but, as they were both nailed to the sclerotic by the optic nerve, the sliding movement was checked by the obstruction, and led to a reduplication of the coats within the area over which the obstruction was felt.

Membranous Conjunctivitis.

Mr. W. H. H. Jessop read notes of thirteen cases treated as in-patients at St. Bartholomew's Hospital. All had adherent membrane, which left a raw surface when stripped off. Eight had the Klebs-Loeffler bacillus, giving the characteristic reactions. From a culture of three of the cases guinea-pigs were inoculated, causing death in forty-eight hours, and showing necrosis of tissue at the seat of inoculation and inflamed suprarenals. There was also enlargement of the neighboring lymphatic glands. The temperature was over 100°; albumen was present in the urine, but only one case had membrane in the fauces. In no case was there paralysis or paresis of the soft palate nor absence of knee-jerk. The other five cases were tested several times for the Klebs-Loeffler bacillus, but without success. Two had streptococcus pyogenes, two had staphylococcus albus, and one staphylococcus aureus. None had albuminuria, only two had raised temperature, two had enlarged glands, but none had membrane on the fauces. The diagnosis between diphtherial and non-diphtherial membranous conjunctivitis could only be made bacteriologically. In these cases the clinical evidence of albuminuria, raised temperature, enlarged glands, and signs of general diphtheria, was a great aid in diagnosis. It was thus proved that all cases of membranous conjunctivitis were not diphtherial, and that the type of severe diphtherial conjunctivitis mentioned in textbooks was rarely seen. The term "membranous conjunctivitis," which was convenient, must be enlarged to include cases due to diphtheria and other organisms.

Diphtheria of the Conjunctiva.

Mr. Sydney Stephenson communicated notes of forty-three cases of conjunctivitis in which diphtheria bacilli were

found. The cases formed 1.25 per cent. of the ophthalmic patients seen in two hospitals for children. The average age was 26.7 months, but 88 per cent. occurred in children under four years. The cases chiefly occurred during the first four months of the year, and often there was a history of exposure to diphtherial infection; 40 per cent. of the children were bodily ill, although the series included but three examples of really severe diphtheria of the conjunctiva. In five cases there was albuminuria, while in two cases the knee-jerks were absent. Diphtheria of the fauces or nose preceded the conjunctival affection once, was associated with it twice, and followed it once. Diphtheria of the skin was present in seven children. The preauricular and other glands were generally enlarged. The malady was unilateral in about three-quarters of the cases. Death occurred once. The infection was "pure" in 13.93 per cent. and "mixed" in 36.04 per cent. of the cases. As regarded treatment, Mr. Stephenson advised liberal and early doses of antitoxin, with 1 in 5,000 solution of corrosive sublimate applied to the conjunctiva by means of a small spray. He concluded that "croupous" and "diphtherial" conjunctivitis were clinically and bacteriologically one and the same disorder.

After remarks by Mr. Bewerton and others, Mr. Jessop and Mr. Stephenson briefly replied.

Card Specimens.

The following card specimens were shown: Mr. G. Hartridge: (1) Ectropion of Uvea; (2) A Large Papilloma of the Conjunctiva.—Mr. H. Work Dodd: (1) A Museum Specimen of a Very Large Melanotic Sarcoma of the Orbit, which had probably commenced in the choroid, and which had come through the globe and had entirely covered it; it was removed on account of pain, but the patient died shortly afterwards from secondary growths in the liver, kidneys, brain and glands; (2) Calcareous Tumor of the Orbit.—Mr. J. Herbert Fisher: Retinitis Circinata.—Mr. J. H. Parsons: (1) Degeneration of the Retina; (2) Arcus Senilis.—Mr. Lawford: Early Changes in the Retina Following a Blow; these changes were present within ten days of the injury.—Mr. R. E. Bickerton: Unusual Changes in the Choroid.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. SHOEMAKER, M.D.
ST. LOUIS, MO.

PROTARGOL; ITS EFFICIENCY IN OPHTHALMIA NEONATORUM AND TRACHOMA.

J. Lawton Hiers (*Georgia Journal of Medicine and Surgery*, Jan.) reports cases and makes the following deductions:

1. On account of its non-coagulability of albumin and albuminous products, and the facility with which it can be indiscriminately combined with the alkalies and local ocular anodynes, protargol possesses a marked advantage over silver nitrate.

2. As contrasted with the latter in the therapy and prophylaxis of gonorrheal ophthalmia, protargol does not undergo chemical changes nor decomposition; and is advantageous in that its action is non-caustic and unirritating.

3. The harmlessness of protargol renders its application easy and safe.

4. Protargol, while exercising remarkable penetrative power, will not stain the mucous membrane nor sear the tissue.

5. Its penetrability enables it the better to undermine and eradicate diseased conditions; which faculty, in a measure, is denied nitrate of silver, on account of the pseudo-membrane eventuating from its application.

6. For general prophylaxis simple washing of the eyes with protargol is sufficient; but where gonorrheal infection has been proven, or is suspected, instillation is indicated.

7. As a routine measure, washing the eyes with protargol should be made obligatory in private obstetrical practice.

8. Protargol should be advocated and substituted for silver nitrate in clinics. It possesses all of the advantages with none of the disadvantages of its silver salt.

9. Protargol is reliable, safe, certain and quick in the

therapeutics of ophthalmia neonatorum and trachoma if used in sufficient strength and with proper frequency.

10. In my practice and experience it has proved itself the remedy par excellence in those conditions in which its employment has been indicated.

TUBERCULOSIS OF THE EYE.

Allen J. Haight (*American Medicine*, Feb. 8) has collected 308 published cases of tuberculosis of the eye, and reports 4 cases of his own, making a total of 312. The iris was the seat of the disease in 121, the choroid in 93, the conjunctiva in 57, the ciliary body in 13, the cornea in 11, the lachrymal gland in 8, the retina in 4, and the optic nerve in 2 cases.

Of 118 cases in which only one eye was affected, the disease extended to the other in about 60 per cent, and in about 40 per cent. the vision was entirely lost. In 86 cases no history could be obtained. General tuberculosis occurred in 60 per cent.

Fifty-eight cases were primary, no other part of the body being affected. Of these, 37 were reported due to injury; in 21 no cause could be discovered; and in 7 the affection extended to the other eye.

One hundred and twenty-two gave a history of hereditary tuberculosis, and in 105 no cause could be discovered.

The author thinks many more cases of primary tuberculosis are due to injury than is generally supposed. He refers to the experience of Peters in a hospital at Bonn, where, of 1,000 injured, at least 500 developed tuberculosis at the site of the injury. He agrees with Peters, "that there is no organism which is so likely to take root and grow at the site of the injury as the tubercle bacillus, and that irritation of the ciliary nerve brings about favorable conditions for colonization and multiplication of this ubiquitous bacillus." He further asserts that "many cases of chronic insidious iridochoroditis with blindess and lowered tension, following injury or an operation, may rest upon a tuberculous basis."

In view of the fact that about 50 per cent. of all the cases recorded in literature (in which ophthalmic tuberculosis was the cause of death) were complicated by acute or chronic tu-

bercular meningitis, the author believes that the majority of cases of tuberculous meningitis are due to ocular tuberculosis, and thinks many lives could be saved by the prompt enucleation of the infected organ.

Before describing the way in which tuberculosis manifests itself in the various tissues of the eye, he refers to the four points laid down by Ludwig Bach:

1. Tuberculosis of the eye is by no means a rare affection.
2. All parts of the eye may be attacked by the disease.
3. It plays a particularly important role in the diseases of the uveal tract.
4. The diseased eye may be the earliest and only manifestation of the tuberculous infection.

The ophthalmoscope shows the deposits as whitish or yellowish-white spots. The single deposits are sometimes so small that they are not visible to the naked eye. They begin in the chorio-capillaris, and advance first towards the retina, and later encroach on the sclera. The iris is the most frequent starting point of tuberculosis. The clinical appearances of tuberculosis of the iris are not always the same, and a diagnosis is at times very difficult.

Machek differentiates, anatomically, three forms:

1. Tuberculous infiltration.
2. Disseminated tubercles.
3. Conglomerated tubercles.

Vignes makes the following points:

1. It is important, from a clinical point of view, to differentiate a tuberculous variety of iritis.
2. This form of inflammation is premonitory of the tuberculous nodular eruption, which it may precede by several weeks.
3. It is characterized by its subacute mode of invasion; its evolution is slow and torpid, being marked by faint reactional signs, although in addition there may be dense synechiæ more or less completely obstructing the pupil.
4. The absence of pathognomonic symptoms renders the diagnosis difficult.
5. The tendency to spontaneous cure of miliary tuberculosis depends upon the individual resistance, and especially upon the resistance of the iris.

After a thorough study of eight cases of tuberculosis of the choroid, George Carpenter thinks that tubercles of this tissue are protein in their characteristics, and we must be prepared to find them under various guises.

Wagenmann says tuberculosis of the choroid can be distinguished from glioma of the retina by the early appearance of inflammatory symptoms, including iritis—phenomena which are not present in this stage of glioma.

The author agrees with Fuchs that tuberculosis of the conjunctiva occurs almost without exception in young people, generally attacking only one eye, although both are occasionally involved.

Sattley, in 1891, classified conjunctival tuberculosis clinically as follows:

1. Characterized by the presence of small miliary ulcers, which later on may coalesce, generally attacking the palpebral, but sometimes affecting the bulbar conjunctiva.

2. Characterized by the presence of greyish or yellowish subconjunctival nodules, varying in size, but rarely larger than a hempseed, not unlike the sago granule of trachoma.

3. Characterized by the presence of florid hypertrophied papillæ and rounded outgrowths or granulation tissue, springing from the palpebral conjunctiva or situated in the fornices, and which soon recur after removal (resembling in many respects the velvety granulations present in a tuberculous arthritis). These granulations are accompanied by edema and thickening of the lids.

4. "Lupus" of the conjunctiva, characterized by numerous pedunculated, cockscomb-like excrescences in the fornices, of a jelly-like consistency, often showing more or less extensive ulceration.

5. To the above four groups one more should be added, in order to embrace those cases which are characterized by the existence of distinctly predunculated tumors, having the macroscopic appearances of ordinary papillomas, and also such as those designated by Mitvalsky as "true polypus of the conjunctiva"—cases in which there is no involvement of the subconjunctival tissue, nor the production of any subjective symptom other than slight inconvenience due to purely mechanical causes.

"Hirschberg estimated tuberculosis of the conjunctiva at 1—6,000; Mules, 1—3,000: Eyre, 1—3,000."

Tuberculoses of the lachrymal gland, lachrymal sac, ciliary body, cornea, and of the nerve are discussed.

The bibliography of the subject is given.

MALARIAL IRITIS: REPORT OF A CASE.

Sidney D. Jacobson's (*American Medicine*, Feb. 8) case was a female, aged 22, who consulted him on account of pain in her eyes, headache, chilly sensations, malaise, and loss of appetite. Examination showed a mild iritis in both eyes; temperature 101°. Inasmuch as syphilis and rheumatism could be excluded as a cause of the iritis, the author made an examination of the blood and found the malarial organism of the tertian type. Fifteen grains of quinine were given every four hours, and a one per cent. solution of atropine used for the eyes twice daily. Under this treatment the iritis very promptly improved and the constitutional symptoms disappeared.

The author reviews the literature of the subject and finds that malarial iritis is a very rare disease. A great many of the best authors make no reference to it at all. Jacobson refers to an editorial in the *Journal of the American Medical Association* (1896, Vol. XXXI., p. 1118), which gives an excellent review of the subject, and quotes from Yarr, as follows;

"Among the most common external signs of malarial eye diseases are probably serpiginous ulcer of the cornea, phlyctenular keratitis and an herpetic eruption of the upper lid and supraorbital regions. Yarr thinks all malarial eye diseases have their starting point in disturbances of circulation, and classifies them under the following heads: Neuritis, hæmorrhage into the retina, retinochoroiditis, effusion into the vitreous. One sign is said to be pathognomonic—namely, a peculiar coloration of the papilla (*tinte rouge grisâtre*). This is due to the presence of malarial plasmodiums in the capillaries. It is stated that 80 per cent. of the cases terminate in a partial atrophy, indicated by a varying diminution of visual acuity, irregular contraction of the field and slight greyishness of the dise; many end in complete recovery; some rare

cases go on to complete atrophy. Retinal hemorrhage may be punctate or severe; in the latter case it may cause complete blindness. Among occasional ocular troubles, due to malaria, may be mentioned periodic blue vision, central scotoma, sudden and persistent amaurosis which may end in atrophy. A note of warning is also sounded regarding the danger of inducing amaurosis by the use of quinine."

Yarr further says: "There are grounds for believing in the existence of a special malarial iridocyclitis characterized by periodicity and a tendency to relapse."

Again, Yarr arranges malarial eye diseases under the following headings:

Conjunctivitis.—(a) Intermittent ophthalmia; (b) conjunctival injection due to neuralgia of the fifth nerve; (c) epidemic conjunctivitis; (d) epithelial xerosis, probably secondary to malnutrition brought about by malaria, this being the local expression of the general disease,

Keratitis.—(a) Dendritic; (b) keratitis profunda; (c) vesicular keratitis (herpes corneæ).

Iritis.—Recorded cases of malarial iritis are not numerous, and in very few is the evidence of malarial origin perfectly satisfactory.

PROGRESSIVE MYOPIA.

Priestly Smith, in discussing progressive myopia at the annual meeting of the British Medical Association, draws the following conclusions:

1. *Age.*—The younger the patient when the myopia develops, the more likely it is to increase. The majority of cases come to a standstill between the ages of fifteen and twenty-five.

2. *The Degree of Myopia.*—The higher it is, the more likely it will be to increase. A child who has 10 D. when ten years old is likely to have 20 D. when ten years older.

3. *The State of the Choroid.*—The higher degrees are to be feared less than the lower, if in the latter the choroid and retina are affected. We first get the typical crescent which may lead on to thinning of the choroid and changes at the macula. The congestion and abnormal conditions soon lead to yielding of the sclerotic and a rapid increase of the myopia.

4. *Constitutional Changes.*—These are of the utmost importance, as myopia frequently follows grave constitutional disturbances and diseases causing high arterial tension.

5. *Evidence of Heredity.* — This is sometimes very marked and as a rule in these cases, although the degree may be high, yet fundus changes are not so frequently met with, and therefore with a strong family history the prognosis is, as a rule, better.

6. *Occupation.*—This is of great importance. Excessive close work develops or aggravates it, and a person developing the disease should never be put to work necessitating this, at least not until any tendency to increase has been checked.

THE HAAB MAGNET.

Frank Van Fleet (*Post-Graduate*, January) says:

All other conditions being equal, the chance of removing a piece of iron or steel from the interior of the eye and saving the eye will be inversely as the interval between the injury and the time the magnet is applied.

An eye which is to be subjected to the magnet should be prepared as carefully as if one were about to extract a cataract.

The chance of recovery is better, and the possibility of sympathetic trouble in the fellow eye less, if the point of penetration of the foreign body does not involve the ciliary region.

The point of the magnet need not necessarily be placed at the center of the cornea, as recommended by Fuchs. Indeed, it is better to place the point of the magnet over the wound through which the foreign body has entered.

If the eye bulges on contact with the magnet, and the foreign body does not make its exit easily, it is better to enlarge the original wound. The magnet will sometimes tear the piece of metal through the wound, and thus increase the amount of traumatism and danger to the eye.

Sometimes when the magnet approaches an eye in which there is a piece of metal capable of being acted on, the globe can be observed to move forward as if to meet the magnet. This is not always the case, however, and the surgeon should not hastily decide that no piece of metal is in the eye if no movement is observed. In one of Dr. Van Fleet's cases,

where the eye was filled with blood, and it was impossible to get a view of the interior, the magnet was applied without result. After an interval of a few minutes it was again applied without result. He had about decided that there was nothing in the eye which the magnet would attract, but concluded to make a final contact, when a small piece of iron came through the wound, and fastened itself on the point of the magnet. This not unusual experience is explained by Callan on the hypothesis that it is necessary for the iron to become magnetized before the attractive force can be exerted.

The Haab magnet is certainly one of the most useful additions to the armamentarium of the ophthalmologist—one of the many products of the last century for the benefit of mankind. Our readers will therefore be interested not only in an illustration of the magnet, but also of the Ophthalmic Hospital at Zurich, where Dr. Haab teaches Ophthalmology to a numerous class of eager students.

In the July number of the *Medical Review of Reviews* we gave an abstract of an article on the treatment of foreign bodies in the eyes, which described the methods of procedure for the use of the Haab magnet, as well as localization by X-rays of the foreign body.

THE EYE DEFECTS WHICH MAY CAUSE APPARENT MENTAL DULLNESS AND DEFICIENCY IN CHILDREN.

Chas. Stedman Bull (*Pediatrics*, February) reviews the eye defects which may cause mental dullness and deficiency in children. The most frequent is hypermetropia, which incapacitates the patient for sustained accommodative effort. The next most frequent is astigmatism, which is often the cause of the unjust charge of dullness, and may be responsible for various reflexes and even epileptiform attacks. The third and most distressing refractive error is myopia. Unable to see what his companions see, and jeered at for his failure, he becomes introspective, and frequently perverted in his tastes.

More rare defects are: Congenital cataract, lens dislocation, coloboma, aniridia and muscular anomalies.

The author also refers to congenital word-blindness, of which cases have been reported by Nettleship and Hinshelwood.

BOOK REVIEWS.

OPHTHALMIC MYOLOGY. A Systematic Treatise on the Ocular Muscles. By G. C. SAVAGE, M.D. Sixty-one Illustrative Cuts and 6 Plates. Published by the author. Nashville, Tenn. 1902.

The name of the author of this interesting work is sufficiently known and connected with all the more recently acquired knowledge in this special field, that we can confidently greet a systematic treatise from his pen as a welcome addition to our literature. A perusal of the book has convinced us that our expectations were fully realized. Whether Helmholtz or Savage is right concerning Listing's Law, the reader will have to judge for himself. Surely the author has done his work with great enthusiasm and in a painstaking manner. Every student of ophthalmology should possess this book, and no ophthalmic practitioner should be without it.

VISUAL ECONOMICS, WITH RULES FOR ESTIMATION OF THE EARNING ABILITY AFTER INJURIES TO THE EYE. By H. MAGNUS, M.D., and H. V. WÜRDEMANN, M. D. C. Porth, 105 Grand Avenue, Milwaukee, Wis. 1902.

No book of more practical value has recently appeared than this volume, which combines the works of two authors who have conjointly labored to establish logical rules for the deduction of loss in earning capacity after injuries to the eyes. Practical tables, which allow of easy computation of the money value of any such loss, enhance its usefulness very greatly. The book is of great value both to the medical and to the legal profession, and we think it will be found to give a safe basis for the adjustment of the damage cases which hitherto were often decided more according to sentiment than reason. This book should enjoy the widest possible circulation. ALT.